AD-A162 782

Job Skills Education Program: Evaluation Standards

Gary Peterson
Florida State University

for

Contracting Officer's Representative
Beatrice J. Farr

Instructional Technology Systems Technical Area
Zita M. Simutis, Chief

Training Research Laboratory
Harold F. O'Neil, Jr., Director

ari
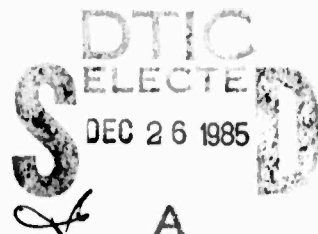
DTIC
ELECTE
DEC 26 1985
S   A

U. S. Army

Research Institute for the Behavioral and Social Sciences

March 1985

85 12 27 002

U. S. ARMY RESEARCH INSTITUTE
FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the

Deputy Chief of Staff for Personnel

L. NEALE COSBY
Colonel, IN
Commander

EDGAR M. JOHNSON
Technical Director

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
Research Note 85-37	AD A162782	

4. TITLE (and Subtitle)	5. TYPE OF REPORT & PERIOD COVERED
Job Skills Education Program: Evaluation Standards	INTERIM Sept 83 - Sept 84
	6. PERFORMING ORG. REPORT NUMBER

7. AUTHOR(s)	8. CONTRACT OR GRANT NUMBER(s)
Gary Peterson, Florida State University	MDA 903 82C 0532

9. PERFORMING ORGANIZATION NAME AND ADDRESS	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
Florida State University Center for Educational Technology Tallahassee, Florida 32306	2Q263743A794

11. CONTROLLING OFFICE NAME AND ADDRESS	12. REPORT DATE
U.S. Army Research Institute for the Behavioral and Social Sciences, 5001 Eisenhower Avenue, Alexandria, VA 22333-5600	March 1985
	13. NUMBER OF PAGES
	29 pages

14. MONITORING AGENCY NAME & ADDRESS(If different from Controlling Office)	15. SECURITY CLASS. (of this report)
	Unclassified
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Beatrice J. Farr, contracting officer's representative. This report, together with RNs 85-22, 85-40, 85-41, 85-42, 85-43, 85-44, 85-45, 85-46 and 85-47, forms part of a series on the Army's Job Skills Education Program (JSEP).

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

program evaluation   computer managed instruction
formative evaluation   PLATO computer systems,
product evaluation   TICCIT computer systems.
computer based instruction

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The Job Skills Education Program (JSEP) is designed to provide soldiers with the prerequisite knowledge and skills required for successfully learning their Military Occupational Specialties (MOS). When the JSEP is put into effect, it will replace the Army's current Basic Skills Education Program (BSEP) with a sophisticated, computer-based system.

In this report, the goals and objectives of the internal evaluation process of JSEP are described. The report presents process and product standards against

(over)

DD FORM 1473 1 JAN 73   EDITION OF 1 NOV 65 IS OBSOLETE

(continued)

the stated objectives. The evaluation standards are intended for use as an internal audit device and for those who are interested in knowing how the JSEP software was produced. *Keywords:*

A-1

USIE
COPY
INSPECTED
2

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle)		5. TYPE OF REPORT & PERIOD COVERED
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s)		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS		12. REPORT DATE
		13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)		15. SECURITY CLASS. (of this report)
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

DD _{1 JAN 73} FORM 1473   EDITION OF 1 NOV 65 IS OBSOLETE

EXECUTIVE SUMMARY

Requirement:

The solicitation required that Florida State University (FSU) develop a set of evaluation standards that will determine whether the system:

(1) meets the stated specifications for courseware, software and hardware;

(2) is as effective as the functional BSEP II program; and

(3) is effective in improving performance on the job.

Procedure:

After a literature review, an initial draft of JSEP goals, process steps and performance standards objectives was formulated by the JSEP internal evaluation team. The final draft was attained through an iterative review process involving CET/Hazeltine designers and evaluators along with project officers from the Army Research Institute.

Findings:

While there are several models for expressing evaluation standards available in the technical literature, the form of the standards expressed herein is optimal for the purpose of the project, namely the development of a job related, computer-based curriculum. The objectives and process steps are consistent with the procedures required to design and develop the JSEP curriculum. The process steps with their accompanying performance standards will provide quality assurance checkpoints in the development of the instructional delivery system.

Utilization of Findings:

The objectives, process steps and standards will be used to document the attainment of milestones and to demonstrate critical steps in the development of computer-based curricula. The objectives with standards will also be points of departure for the conduct of Tasks 7, 8, 9, 10, 13, 16, 17, and 18.

JSEP EVALUATION STANDARDS

CONTENTS

The Job Skills Education Program (JSEP) is a multi-phase program begun in Fiscal Year 1982, and designed to enhance enlisted career potential by improving soldier job performance. The sponsor, the Education Division, Office of the Deputy Chief of Staff for Personnel, expects JSEP to replace the Army's current Basic Skills Education Program when it is implemented.

The JSEP program, being developed by Florida State University (FSU) will result in a standardized curriculum for soldiers who demonstrate deficiencies in the knowledge and skills required to successfully learn their Military Occupational Specialty (MOS).

In accordance with current policy, JSEP will be an on-duty program. It will also use a computer-based management system to facilitate an open entry/open exit approach. At present, most of the lessons being developed will be computer delivered; however, the plan calls for using existing materials, and incorporating materials developed as part of other ARI efforts, whenever appropriate.

A unique aspect of JSEP is that it builds upon a very detailed front-end analysis of MOS Baseline Skills. The analysis covered tasks performed by soldiers in the 94 highest density MOSs, in addition to Common Tasks (the skills that all soldiers, regardless of their MOS, need to know). Although the Army has over 300 MOSs, the 94 covered in the analysis represent about 80% of all soldiers. Perhaps the most useful product developed for the analysis was a taxonomy listing more than 200 prerequisite competencies.(P.C.) for these MOSs. The competencies were derived from detailed reviews of Soldier Manuals, and from extensive interviews with subject-matter experts at Army schools. This effort produced a series of tests intended to diagnose deficiencies in the P.C.s. Modified versions of these tests will be used in JSEP.

The JSEP program will include a front-end learning strategies module designed to improve soldier skills in reading, studying, test taking, and problem solving. The curriculum will consist of this strategies-training, plus 180 diagnostic review lessons, and 120 skill development lessons, which are being developed for the PLATO and MicroTICCIT computer systems. The program is being tried out at two TRADOC sites and two FORSCOM sites, prior to an Army-wide phased implementation.

vii

JSEP EVALUATION STANDARDS

OVERVIEW

Operational Problem

It is not news that soldiers must be trained to do their jobs. They must be trained so that each Army job is performed competently--regardless of differences in ability and background in newly entering soldiers. To accept less would cause many mission elements to fail.

Moreover, many Army jobs are increasingly dependent upon the soldier's ability to use high technology and the ability to learn new technology as it develops. Soldiers, therefore, need more than training. They need enough education to be able to learn subsequent jobs, to become eligible for promotion, and ultimately, to provide leadership for tomorrow's Army.

The Job Skills Education Program (JSEP) is designed to provide soldiers with job-related basic skills instruction that is prerequisite to learning their skill level 1 and 2 job tasks during their first duty assignment. JSEP provides functional basic skills instruction on MOS specific requirements. It is based on an extensive job analysis of 94 of the Military Occupational Specialties (MOS) which contain the largest proportion of soldiers and tasks contained in the Soldier's Manual of Common Tasks.

As it is conceptualized, the JSEP curriculum recognizes that the vast majority of soldiers will have been exposed to similar basic skills instruction before entering the Army. Many entering soldiers, however, will not have learned those basic skills well enough, or will not remember what they have learned. To help soldiers learn better and remember more, JSEP incorporates straightforward training in research-based learning strategies that are directly aimed at improving learning and retention.

Research Objective

The solicitation required that Florida State University (FSU) develop a set of evaluation standards that will determine whether the system:

(1) meets the stated specification for courseware, software and hardware;

(2) is as effective as a functional BSEPII program; and whether

(3) is effective in improving performance on the job.

Scope

The project purpose, goal, objectives and process steps with their respective performance standards are presented for the entire JSEP project. The performance standards are stated in the form of either process criteria or in the form of products which (1) contain analyses of data or (2) describe important processes used in the development of the curriculum.

1

Approach

The strategy for developing JSEP evaluation standards was first to
articulate goals, objectives, and process steps to describe the intents of the
project. The works of Stake, Stufflebeam, Scriven, Worthen and Saunders were
important here. The objectives and process steps were then reviewed by the
CET/Hazeltine JSEP executive committee and revised accordingly. Following
these procedures, an outline of performance standards was initially developed
and these were again reviewed by members of the CET/Hazeltine JSEP executive
committee.

The performance standards are, in the main, stated in the form of either
process criteria or in the form of products which contain certain kinds of
information or analyses. For example, at this time we prefer to state that we
will analyze and report the pass rate of troops at a field test site while
controlling for a variety of possible intervening variables, rather than to
predict a certain outcome. We believe that process standards must be used
during the design and development phases in order to preserve the decision
freedom until empirical data are available from the tryouts. The setting of
desirable outcome standards will be possible later when the relationship
between input variables and outcomes become better known. Only at such a time
can we set a standard to address the "How-much-development-is-enough" issue.

While there are other approaches and styles for the presentation of
evaluation standards (e.g., Standards for Evaluation of Educational Programs,
Projects and Materials, New York: McGraw Hill, 1991) the form used here, we
believe, both comprehensive and useful for making decisions for product
development as well as for internal and external audits of project activities
and accomplishments.

On the basis of the review of these evaluation standards by ARI, and their
subsequent refinement, the evaluation plan (Task 7) will be developed to
specify the methods of inquiry, the measures to be used, the population
samples, the proposed analyses, etc. Until that final refinement, the
important question is. What should be observed about the program that will be
the most revealing for what kinds of audiences?

For now, we are directing our inquiry to those who may wish to know more
about producing effective job-related, computer-based instruction for the
development of basic intellectual skills. Therefore if there is a single
overarching evaluation standard, it is the degree to which JSEP, as
systematically produced curriculum, can effectively remove prerequisite
competency deficiencies.

RESULTS OF INVESTIGATION

Purpose

Provide an on-duty, job-related basic skills development educational
program that will: (1) improve job performance, (2) function in the Army
outside of immediate work setting, and (3) enhance the potential for completing
off-duty educational programs.

Goal

To design, develop and test a job and career supportive computer-based prerequisite competency curriculum for possible Army-wide adoption.

Objectives

1. Establish project review, control, and decision-making procedures.

2. Conduct a review of literature and instructional materials related to JSEP purpose.

3. Design a job-related, computer-based prerequisite competency curriculum (JSEP).

4. Design an instructional support system to field test the JSEP curriculum.

5. Design a management information system to direct, monitor and report student progress in JSEP.

6. Develop a job-related, computer-based prerequisite competency curriculum.

7. Field test a job-related, computer-based prerequisite competency curriculum.

8. Compare alternative computer-based delivery systems in terms of effectiveness, efficiency and benefit to U.S. Army mission.

9. Evaluate the potential impact of JSEP on the Army job skills, educational programs, and soldier career goals.

10. Explore the feasibility of using JSEP for the awarding of high school credits and credentials.

11. Prepare specifications for the dissemination of JSEP Army-wide.

3

OBJECTIVE I: ESTABLISH PROJECT REVIEW, CONTROL, AND DECISION-MAKING PROCEDURES

Process Steps

1. Establish a JSEP Advocacy Team representing constituent groups to recommend policy regarding design, development, field testing, evaluation, and dissemination of JSEP.

2. Establish an internal review committee for the design and development of the JSEP curriculum.

  ..

3. Establish an internal evaluation committee to assist the project in clarifying project goals, objectives, and process steps and to help in establishing criteria for their attainment.

4. Establish a communication linkage with the JSEP external evaluation team.

Performance Standards

1a. The Advocacy Team will meet as guidance is required and will review internal and external evaluation of JSEP

1b. Constituencies represented are TAGO, TRADOC, ARI, Base Commanders, ESOs, external evaluators, JSEP developers.

2a. The internal review committee meets at least weekly.

2b. Internal review committee consists of instructional designers, management information specialists, computer programmers, educational psychologists, evaluators.

3a. The members of the evaluation committee meet periodically with the internal review committee (see 2b).

3b. The evaluation committee meets as guidance is required.

3c. The committee consists of test developers, CTEA specialists, designers, management information specialists, evaluation, methodologists.

4a. Evaluations of JSEP products and processes reviewed by external evaluators.

4b. JSEP developers receive copies of reports pre-

4

pared by external
evaluators for ARI.

5. Establish management
control procedures to
coordinate JSEP design,
development and evaluation
functions

5a. The management and control
functions are described.

5b. There is a set of policies
and procedures for manage-
ment and control.

5c. Communication networks are
established among developers,
evaluators and project
officers.

OBJECTIVE II: CONDUCT A REVIEW OF LITERATURE AND INSTRUCTIONAL
MATERIALS RELATIVE TO JSEP PURPOSE

Process Steps

1. Review MOS baseline skills analysis conducted by RCA, and identify prerequisite competencies by MOS.

2. Review extant print and computer-based instruction materials (software) for applicability to JSEP (especially those not reviewed by TRADOC SSP'S)

3. Conduct a literature review of published research related to computer-based learning.

4. Conduct a literature review of published research related to adult learning of prerequisite competencies and learning strategies.

5. Compare content of ETS locator and diagnostic test items with content domains of prerequisite competencies.

Performance Standards

1a. There is a catalogue showing the relationships among PC's, MOS and task indicator statements.

2a. A list of sources are developed.

2b. Materials obtained are recorded.

2c. An evaluation of materials is conducted and the outcome of the evaluation recorded.

3a. List of sources used to identify literature is developed.

3b. A bibliography of literature obtained for project use is kept.

3c. A description of how material is incorporated into lessons.

4a. A list of potential sources is developed.

4b. A bibliography of literature obtained for project use is kept.

4c. A description of how material is incorporated into lessons.

5a. There is documentation of diagnostic test items for each PC that have been accepted as is, modified, eliminated or replaced by CET/ Hazeltine curriculum developers.

6

OBJECTIVE III: DESIGN A JOB-RELATED, COMPUTER-BASED PREREQUISITE
COMPETENCY CURRICULUM (JSEP)

Process Steps

1. Develop criteria for
    specifications for
    each JSEP lesson.

Performance Standards

1a. Procedures are described
     for how criteria were
     developed and adopted.

1b. Lesson specification forms
     are developed and approved.

1c. There is a description of
     how each lesson directly
     teaches learning
     strategies or enhances
     their development.

1d. Each lesson has a valid
     content pretest and posttest.

1e. The use of extant materials
     is specified with copyright
     secured if necessary.

1f. Alternative learning
     options are specified that
     supplement or complement
     CBI delivery system.

1g. MOS-specific content is
     outlined.

2. Develop screen displays to
    portray visual stimuli on
    PLATO and TICCIT monitor.

2a. PLATO and TICCIT grids
     completed and numbered.

3. Develop and pilot test five
    prototype JSEP lessons
    using PLATO and TICCIT.

3a. The purposes for developing
     the specific prototypes are
     stated.

3b. The problems identified in
     developing and implementing
     the prototypes are
     documented.

3c. The responses from the
     target audiences are
     documented and reviewed.

3d. The direct costs to develop
     5 prototypes are estimated.

4. Design test interfaces from locator to summative posttest for individualized JSEP program.

4a. Procedures routing students through sequences of tests are documented.

4b. Options for reducing test time with cost/benefit trade-offs are documented.

5. Develop a decision map (e.g. flowchart) to guide learners through JSEP program.

5a. The development of a decision chart is described.

5b. Flow chart is available depicting learner flow through the JSEP instructional system.

5c. The pathways through JSEP is founded in logical, theoretical, or empirical rationale.

6. Develop individualized summative posttests with potential for generating multiple forms.

6a. Procedures for generating items to form a summative posttest are documented.

6b. Procedures for generating equivalent multiple forms are documented.

6c. Pass/fail criteria are established with rationale for setting minimum standards.

7. Describe JSEP, CBI curriculum model.

7a. A logically derived hierarchical structure of the JSEP prerequisite competencies is produced.

8. Prepare for production of JSEP curriculum by estimating resources, time and cost for development.

8a. An outline of unit cost for production is available.

8b. A PERT chart is available for demonstrating work flow among production elements.

8c. A production schedule is available for inspection.

8d. Quality control procedures are in place for both process and output.

8

9. Develop formative evaluation procedures to determine lesson effectiveness (achievement and attitudes).

9a. The procedures used to develop evaluation criteria and procedures will be described.

9b. A standard evaluation instrument is used for all lessons and is reviewed by the evaluation committee.

9c. Formative evaluation procedures are conducted consistently.

9d. Desired outcome standards are stated.

10. Design on-going evaluation procedures to monitor and improve JSEP curriculum.

10a. Evaluation instruments have been selected or developed to obtain information pertaining to
(a) achievement
(b) attitudes
(c) completion rate
(d) cost

10b. An evaluation design has been developed by the JSEP internal evaluation committee.

10c. Evaluation design has been reviewed externally by ARI and the external evaluation team.

10d. Data collection procedures are designed and reviewed by ARI, TAGO and ESO's.

Process Steps	Performance Standards
1. Suggest an instructional strategy to be used by personnel who will administer remedial instruction.	1a. Remedial instructional strategy as outlined or suggested for JSEP.
2. Specify instructional support personnel required for testing, remedial instruction, motivation, counseling, recordkeeping, etc., within the limitations of BSEP II contract requirements.	2a. Job titles and job descriptions for direct instructional support personnel are specified for both the preliminary and full scale tryouts.
3. Specify computer maintenance support personnel.	3a. Job titles and job descriptions of computer maintenance personnel are recorded.
4. Specify library support personnel for storage and retrieval of instructional materials.	4a. Job titles and job descriptions of library personnel are recorded.
5. Specify required JSEP support personnel for tasks not directly related to delivery of instruction (e.g., ESO, receptionist, clerk, etc.).	5a. Job titles and job descriptions of related personnel are recorded.

.

---

1. Note: the Process Steps and Performance Standards are applicable to both the preliminary and full scale tryouts.

OBJECTIVE V: DESIGN A MANAGEMENT INFORMATION SYSTEM TO DIRECT, MONITOR
               AND REPORT STUDENT PROGRESS IN JSEP

Process Steps

1. Identify decision points
   for the JSEP management
   system including decision.
   points within the
   curriculum.

2. Specify users of
   information at each
   decision point.

3. Assess information
   requirements for
   appropriate personnel at
   each decision point in the
   JSEP management system.

4. Develop procedures to input
   and record information for
   decision-making purposes.

5. Develop procedures to
   access information at
   decision-points.

6. Specify temporary and
   permanent records.

Performance Standards

1a. A flow chart (from the
    students perspective) for
    how students qualify for,
    enter in, pass through,
    exit from JSEP, and return
    is presented in JSEP
    Management System Opera-
    tor's Manual.

2a. The users of information
    at each decision point are
    noted and approved by ARI
    and stated in JSEP Manage-
    ment System Operator's
    Manual.

3a. The kinds of information
    required at each decision
    point, as well as go,
    no-go criteria are stated
    in JSEP Management
    System Operator's Manual.

4a. Procedures for recording
    and storing information
    (on-line or off-line) are
    described in JSEP Manage-
    ment System Operator's Man-
    ual.

4b. Back-up information system
    is developed to avoid the
    possibility of losing in-
    formation due to power
    outages, etc.

5a. Procedures for accessing
    records are described in
    JSEP Management System
    Operator's Manual.

6a. Permanent records are
    specified, e.g., student
    achievement information,
    student background data
    locator scores, diagnostic
    scores, summative posttest
    scores.

11

7. Distinguish between open access and qualified access to information.

7a. "Passwords" are established for accessing certain kinds of information.

7b. Criteria are established for the issuing of passwords.

OBJECTIVE VI: DEVELOP A JOB-RELATED, COMPUTER-BASED PREREQUISITE
COMPETENCY CURRICULUM

Process Steps

1. Design and develop a
   production system to
   produce computer software,
   pretests and posttests, and
   support media.

2. Identify, secure, and train
   required production
   personnel.

3. Specify production
   schedule.

4. Establish production
   quality control criteria
   and procedures.

5. Conduct CET tryouts.

Performance Standards

1a. A PERT chart is developed
    showing how production
    elements are sequenced.

1b. Job roles, duties, and
    responsibilities are
    stated.

1c. A production management
    information system is
    established with production
    records.

1d. Sufficient hardware is in
    place for in-house
    development.

1e. Quality control review
    procedures are formalized.

2a. Educational and job history
    requirements are specified.

2b. Appropriate affirmative
    action procedures are
    taken.

2c. Training responsibilities
    are stated.

2d. Training procedures are
    documented.

3a. Production schedule is
    developed and approved by
    ARI.

4a. Quality control criteria are
    established for try-outs.

4b. Quality control criteria are
    established for field test.

5a. At least 3 "learners"
    participate in try-outs.

5b. Formative evaluation
    procedures are formalized.

13

	5c. Records are made of both learner and developer feedback.
6. Conduct preliminary tryout on one Army past (Ft. Rucker).	6a. Conditions of implementation will resemble field test.
	6b. Observations are made regarding achievement and JSEP system proficiency.
7. Revise as required.	7a. Records are made of revisions made to lessons and system specifications before field test.
8. Develop support personnel training materials and procedures for field test.	8a. Training procedures for JSEP support personnel at the four field test sites are stated and approved by ARI.
	8b. Appropriate training materials are produced or collected.
9. Specify requirements for hardware and software installation and maintenance at field test site.	9a. Hardware requirements for each site are established to take into account projected usage parameters (See task 4 report).
	9b. Procedures to store and retrieve software are stated.
	9c. Contract arrangements and policies for hardware and software maintenance are made among Hazeltine Corporation, Control Data Corporation, FSU and ARI.

14

OBJECTIVE VII: FIELD TEST A JOB-RELATED, COMPUTER-BASED
                 PREREQUISITE COMPETENCY CURRICULUM

Process Steps

1. Select two FORSCOM and two
    TRADOC bases for field
    test.

2. Interpret Army policy and
    recommend procedures for
    determining eligibility
    for JSEP field test.

3. Develop method for
    informing CO's of JSEP
    opportunity and its goals.

4. Identify and secure support
    personnel with necessary
    education and job
    experience.

5. Train support personnel
    to perform assigned JSEP
    functions.

6. Establish on-going
    evaluation system.

7. Establish a policy/advisory
    committee at each FORSCOM
    and TRADOC field site for
    implementing, monitoring,
    and evaluating JSEP.

Performance Standards

1a. Two FORSCOM and two TRADOC
    sites are selected.

2a. Criteria for eligibility
    for JSEP field test (e.g.,
    MOS, locator scores,
    diagnostic test scores) are
    stated and approved by ARI.

3a. Personnel and media selected
    for informing CO's of JSEP
    are documented.

4a. Support personnel are
    identified, hired and
    assigned to JSEP according
    to specifications.

5a. There is documentation of
    attendance at training
    sessions held by CET.

5b. Required competencies are
    mastered as indicated by a
    checklist.

6a. Performance indicators are
    established.

6b. Policies and procedures for
    evaluation are documented.

6c. Decision makers and
    decision processes
    documented.

6d. Procedures and funds for
    revisions are documented.

7a. Four policy/advisory
    committees are in place.
    Membership is stated and a
    tentative schedule of
    meetings adopted.

8. Articulate exit JSEP performance standards by MOS.

8a. Minimum proficiency levels on locator and diagnostic tests and summative posttests are stated.

9. Recruit and select soldiers for JSEP field test.

9a. Procedures for identifying a pool of potential "JSEP eligibles" are stated.

9b. Criteria for selecting "JSEP eligibles" are stated.

9c. Procedures for securing CO support to release "JSEP eligibles" from duty are in place.

10. Document JSEP program activities.

10a. Amount of time per activity per lesson is recorded for learners and for support personnel.

11. Establish reporting mechanisms for achievement.

11a. Mechanisms for maintaining temporary and permanent records are in place.

12. Install appropriate hardware, software, and personnel required for field test.

12a. Hardware, software, and personnel configuration are installed at least one full day prior to implementation of field test.

16

OBJECTIVE VIII: COMPARE ALTERNATIVE COMPUTER-BASED DELIVERY SYSTEMS IN
TERMS OF EFFECTIVENESS, EFFICIENCY, AND BENEFIT TO U.S.
ARMY MISSION.

Process Steps

Performance Standards

1. Ascertain costs for initial outlay of hardware.

   1a. Initial costs and economies of scale are reported.

2. Ascertain costs for installation.

   2a. Relationship between installation costs and troop demand are reported.

3. Estimate life cycle operational costs.

   3a. The life cycle of TICCIT and PLATO systems is estimated and reported.

   3b. Replacement costs are estimated and reported.

4. Determine reliability of each system.

   4a. A ratio of down-time/total time will be calculated during field trial and reported.

   4b. Causes of down-time will be reported.

5. Evaluate human factors considerations of systems.

   5a. Attitude scale will be selected/developed to assess human factors from learner perspectives, and instructor and developer perspectives (e.g., fatigue, eye strain, noise level, etc.).

   5b. Behavioral indicators will be selected related to human factors (e.g., time to learn keyboard, time to progress through identical lessons, break time, etc.).

   5c. Results of attitudinal and behavioral survey will be reported.

6. Determine feasibility of supplementing JSEP locally.

   6a. Compare procedures and resources required to supplement JSEP.

7. Ascertain costs to develop JSEP software.

7a. Direct costs to develop JSEP curriculum will be reported for TICCIT and for PLATO.

7b. Ratio of cost/hr. of on-line instruction will be reported.

8. Formulate optional hardware configuration for least cost while holding effectiveness (i.e., training) constant. (Cost Benefit Trade-off Analysis - Task 8).

8a. A report will detail direct costs to install JSEP at multiple levels--from a stand-alone unit to a wide geographical sharing of core hardware for PLATO and TICCIT. (See Task 4 and Task 8)

9. Ascertain relationship between JSEP system elements and effectiveness (Cost Training Effectiveness Analysis - Task 9).

9a. A report will detail direct costs to implement JSEP and show relationship between variable cost elements and achievement.

9b. An optimal JSEP system model(s) will be recommended for PLATO and TICCIT in a final report.

OBJECTIVE IX: EVALUATE THE POTENTIAL IMPACT OF JSEP ON ARMY JOB
SKILLS; EDUCATIONAL PROGRAMS, AND SOLDIER CAREER
GOALS

Process Steps

1. Ascertain degree of
   development of JSEP pre-.
   requisite competencies
   attributable to the JSEP
   computer based system.

2. Determine relationship
   between achievement in
   JSEP and job performance.

3. Analyze JSEP utility.

Performance Standards

1a. Changes in locator test
    scores will be reported
    with prior education
    and MOS as control
    variables.

1b. Change in summative post-
    test scores of assigned
    PC's will be reported with
    prior education and MOS
    as control variables.

2a. Change in reading
    comprehension of
    Soldier's Manual will be
    reported using a CLOZE
    test.

2b. A job performance
    measure using the MOS
    task indicator statements
    will be developed to
    assess changes in job
    performance attributed
    to JSEP.

3a. Characteristics of learners
    who master PC's off-duty
    will be reported.

3b. Average number of on-duty
    hours to complete JSEP will
    be recorded with MOS and
    site location as control
    variable.

3c. Usage by hours of the day
    will be reported.

3d. Optimal scheduling
    procedures will be
    recommended.

4. Analyze JSEP completion rate.	4a. Completion rate will be reported by MOS with locator scores, and prior education as control variables.
5. Analyze CO attitudes toward JSEP.	5a. CO attitudes will be reported regarding convenience, perceived effectiveness, and value to Army mission.
6. Assess achievement in JSEP with BSEP II criteria.	6a. Change in GT scores will be reported with amount of JSEP instruction, MOS, and prior educational achievement as control variables.
	6b. Change in TABE scores will be reported with amount of JSEP instruction, MOS, prior educational achievement, and learning style as control variables.
7. Assess BSEP II instruction with JSEP criteria.	7a. Change in locator scores will be reported with MOS, prior educational achievement, and learning style as control variables.
	7b. Changes in summative posttest scores will be reported with prior educational achievement and MOS as control variables.
	7c. Changes in job performance using JPM with task indicator statements will be used to assess changes in job performance attributed to BSEP II.
8. Analyze attitudes of ESO and instructional staff.	8a. ESO and instructional staff attitudes toward JSEP will be reported regarding convenience, effectiveness and value to Army mission.

9. Analyze learner attitudes.

9a. Attitudes of troops toward JSEP in terms of perceived effectiveness, usefulness, and enjoyment of learning in environment will be reported.

OBJECTIVE X: EXPLORE THE FEASIBILITY OF USING JSEP TO AWARD HIGH
SCHOOL CREDIT OR CREDENTIALS

Process Steps

1. Analyze relationship be-
   tween performance on the
   Locator Test and on the
   GED.

2. Compare JSEP prerequisite
   competencies with GED
   competencies.

3. Compare JSEP prerequisite
   competencies with high
   school courses and com-
   petencies.

4. Prepare policy recom-
   mendation regarding
   performance on Locator
   and awarding of GED.

5. Prepare policy recom-
   mendations regarding JSEP
   PC achievement on
   Diagnostic Tests and the
   awarding of high school
   courses and credits.

Performance Standards

1a. Examine RCA validity
    research.

1b. Validate RCA research on
    JSEP field test population
    by reporting correlations
    between locator and GED
    for JSEP population.

2a. Results of a content
    analysis will be reported
    using SME's to rate
    similarity between JSEP
    PC's and GED competencies.

3a. Taking a sample of high
    school courses in Florida,
    report degree of overlap
    between PC's and course
    content.

3b. Taking a sample of
    accredited high school
    correspondence courses,
    report degree of overlap
    between PC's and course
    content.

4a. Policy statement is
    developed with supportive
    research documentation.

5a. Policy statements will be
    developed with supporting
    research documentation.

6. Present policy recommendations to regional and national accrediting societies.

6a. Target audiences are identified.

6b. Briefings with members of accrediting societies are arranged.

6c. Outcomes of briefings are reported.

OBJECTIVE XI: PREPARE SPECIFICATIONS FOR THE DISSEMINATION OF JSEP ARMY-WIDE

Process Step

1. Develop a JSEP system model(s) based on cost and effectiveness data from field test.

2. Specify PC's for which JSEP has demonstrated effectiveness.

3. Recommend a needs assessment procedure to identify PC deficiencies.

4. Develop procedure to estimate costs to remove PC deficiencies through use of JSEP.

Performance Standards

1a. JSEP system model(s) are developed which optimize costs and effectiveness.

2a. PC with demonstrated effect sizes beyond chance are identified.

3a. An efficient needs assessment procedure will be recommended in a report.

4a. A predictive cost model will be reported to estimate cost to remove PC deficiencies.

24

APPENDIX

LIST OF ACRONYMS

ASVAB - Army Services Vocational Aptitude Battery
ARI - Army Research Institute
BSEP - Basic Skills Education Program
CBI - Computer Based Instruction
CET - Center for Educational Technology, Florida State University
CLOZE - Test for reading level
CTEA - Cost and Training Effectiveness Analysis
ESO - Education Services Officer
ETS - Educational Testing Service, Princeton, N.J.
FORSCOM - United States Army Forces Command
FSU - Florida State University
GED - General Educational Development Test
GT - General Technical scores from the ASVAB
JSEP - Job Skills Education Program
JPM - Job performance measure
MOS - Military Occupation Specialty
PC - Prerequisite Competency
RCA - Radio Corporation of America
SME - Subject matter experts
SSP - Scientific Service Project
TABE - Test of Adult Basic Education
TAGO - The Adjutant General's Office
TICCIT - Hazeltine Computer System
TRADOC - United States Army Training and Doctrine Command